PREFACE

Prior to the IAU Symposium 169, it had been 11 years since the IAU held a major meeting on the topic of the Milky Way. Although some of the problems that astronomers were addressing in the literature were similar to those that were at the forefront at the last Milky Way IAU, there seemed to be a considerable shift in the areas of interest since then. For example, the nature of the Galactic center and the Galactic nucleus remain today active and compelling areas of research as they were ten years ago. However, the strong interest in the possibility that the Milky Way has a central bar, and the entire question of non-axisymmetric mass distributions throughout the Galaxy were little discussed then but have enjoyed a large surge of interest in the last five years.

It seemed fitting, therefore, that rather than have a meeting that simply assessed the progress of Milky Way research since the last IAU symposium, a meeting be held in which the subjects of most compelling current interest would be discussed and debated. Hence the title of the meeting, "Unsolved Problems of the Milky Way." There are of course more unsolved problems than could be addressed at the meeting, and an attempt was made to identify those problems that not only hold strong interest even for those astronomers not directly engaged in Milky Way research, but for which there is some hope of either being solved or having significant progress made in the next five to ten years. Even still, not all problems of wide interest could be accommodated. There was nothing in the program, for example, on high velocity clouds, or directly relating to spiral structure.

The meeting was one of six scientific symposia held in conjunction with the 22nd IAU General Assembly in the Hague. The organization was a bit different from most meetings in that each major topic was organized by one or two people on the scientific organizing committee in consultation with the chairs. Each session had the normal complement of invited speakers,

but the session organizers also chose from the papers contributed as posters, a number to be given orally. This allowed the organizers to identify those papers presenting the research most relevant to the chosen topics so that they could be aired for the entire audience. The process seemed to work well and made it possible to have a reasonably large number of relatively new faces make presentations to the entire symposium. The scientific organizing committee included: James Binney (co-chair), Leo Blitz (co-chair), Butler Burton, Francesca Matteucci, Mark Morris, Jan Palous, Paul Schechter, David Spergel, and Scott Tremaine. Hans Bloemen was the local organizer, and Hugo van Woerden did an outstanding job in making sure that meeting ran smoothly.

The organization of this volume follows reasonably closely the organization of the meeting itself. The order of the papers, however, has been changed somewhat so that speakers who have presented closely related topics have their papers appear together. Poster papers are presented at the end of each chapter which covers the most closely related topics. We have made an effort to reproduce as well as we could the discussion after each paper. In twenty years, the discussion will probably be the most widely read part of the book. We have also provided a subject and object index.

The year and a half prior to IAU 169 saw the passing of Jan Oort, whose towering contributions to the understanding of the Milky Way date back to the 1920s. Oort probably did more to lower the number of unsolved problems of the Milky Way than any other astronomer, not to mention the important work he did in many other areas. It therefore seemed particularly appropriate to dedicate the meeting to Oort, especially since the IAU was being held in his native Holland. As it turned out, two others who made enormous contributions to our understanding of the Milky Way also passed away the year the IAU was held: W.W. Morgan, and David Allen. It is perhaps a fitting tribute to all three that the Galaxy that they did so much to help us understand remains an object that even now harbors mysteries engaging a new generation of Oorts, Morgans, and Allens.

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